

**Thorold Transportation Master Plan
Background Report B:
Needs, Opportunities and Alternatives
Assessment**

**Final Report
June 2020**



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1 Introduction

The TMP – Thorold’s first – is a strategic vision for the transportation system and is developing networks, policies, and programs to achieve the City’s transportation vision and associated goals. This report presents the transportation needs and opportunities – identified through a review of the existing policy, population, and transportation context and anticipated future conditions – and the development of a preferred planning solution.

The Thorold TMP follows the Municipal Class Environmental Assessment (EA) process for an integrated Master Plan as described in Section A.2.7 of the Municipal Engineers Association Municipal Class EA manual.

1.1 Transportation Vision and Objectives

The vision for Thorold’s TMP has been shaped by existing policy documents, input from the public and stakeholders and consultation with the Project Team. The Thorold TMP vision is as follows:

Thorold’s regionally-integrated, multi-modal transportation system moves people and goods safely, effectively and efficiently to support a thriving, vibrant, livable community.

To support the vision, the following objective were developed:

- **Objective #1:** Create a more multimodal transportation system that encourages sustainable travel modes.
- **Objective #2:** Develop a transportation network that meets the needs of present and future residents, visitors and businesses.
- **Objective #3:** Facilitate the development of livable, healthy, safe, accessible and prosperous communities.
- **Objective #4:** Strategically implement the plan in a fiscally sustainable and accountable manner.

2 Policy Context

Planning and policy documents from all levels of government that have influence on the development of Thorold’s TMP are summarized in below. Each document is briefly described followed by its relevance to the TMP.

Exhibit 2.1: Overview of Relevant Planning and Policy Documents

Document	Overview and Relevance
Provincial Plans and Policies	
Provincial Policy Statement, 2014	<p>The Provincial Policy Statement (PPS) provides policy direction on matters of provincial interest related to land use planning and development. The PPS provides guidance for development and land use patterns, employment, housing, public space, infrastructure and public facilities, transportation, management of resources, and protection of public health and safety.</p> <p>The Thorold TMP will be consistent with the policies set out by the Province in the PPS. Policies established in the PPS include increased focus on transportation choice, active transportation, and planning streets for all users, which are consistent with the general objectives outlined in City of Thorold plans and policies (see Section 4.3).</p>
Growth Plan for the Greater Golden Horseshoe, 2017	<p>The Growth Plan for the Greater Golden Horseshoe is a long-term growth management and land use plan for the Greater Golden Horseshoe area of southern Ontario. The plan aims to manage growth by describing where and how the growth should occur, support growth with necessary infrastructure, and protect key environmental resources.</p> <p>Thorold is subject to the policies within the Growth Plan. These policies dictate where and how much growth should occur, aiming for more intensification within the delineated built-up areas. The Growth Plan also designates greenfield land for new development. The Thorold TMP will respond to these land use inputs, in concert with the City’s Official Plan, in developing solutions to address future transportation infrastructure needs and opportunities.</p>
Greenbelt Plan, 2017	<p>The Greenbelt Plan serves to protect significant natural features, including the Niagara Escarpment, and important and productive farmland from unregulated development. The Greenbelt Plan provides a strategy and certainty about urban structure, where and how growth should be accommodated, and what should be protected.</p> <p>Portions of Thorold are located within the protected Greenbelt Area, including lands designated as Protected Countryside. The Thorold TMP will adhere to this Plan.</p>

Document	Overview and Relevance
Niagara Escarpment Plan, 2017	<p>The Niagara Escarpment Plan sets out land uses within the Niagara Escarpment with the aim of protecting the Escarpment’s geological features as well as the lands in its vicinity. The Plan only allows compatible development. Portions of the Niagara Escarpment Plan area are within Thorold or located adjacent to the city’s borders. Within Thorold, lands are designated as Natural Areas, Protection Areas, Rural Areas, and Resource Extraction Areas.</p> <p>The mandate to preserve and protect the Niagara Escarpment must be considered in planning for transportation infrastructure to support growth. The Thorold TMP will adhere to this Plan.</p>
#CycleON: Ontario’s Cycling Strategy, 2013	<p>#CycleON is the Province’s long-term strategy to promote cycling to people of all ages and abilities. The Strategy is based on a bold vision and ambitious goals, with a targeted set of strategic directions intended to guide the development of policies, programs, and a Provincial network of cycling facilities over the next 20 years. The Strategy also includes an action plan, with Action Plan 2.0 released in 2018.</p> <p>The development of Thorold’s active transportation network will be informed by the Province’s strategic framework.</p>
Regional Plans and Policies	
Niagara Region Official Plan, 2014	<p>The Regional Official Plan (ROP) is a long-range plan used to guide the physical, economic, and social development of Niagara Region. The ROP prescribes growth and intensification targets for its local municipalities and provides direction on regional transportation strategies.</p> <p>The Thorold TMP will be informed by the strategies and objectives outlined in the ROP.</p>
Niagara Region Transportation Master Plan, 2017	<p>The Niagara Region Transportation Master Plan (NRTMP) presents a long-term strategy that guides the planning, development, and renewal of a multi-modal transportation system based on projected needs and the Region’s overall vision for sustainable growth. The NRTMP developed recommendations for a Strategic Cycling Network comprised of on- and off-street facilities that includes infill links on municipal roads. The NRTMP also highlights three Regional road network capacity/operational improvements in Thorold: Merritt Rd (Regional Road 37), Highway 20 (Regional Road 20) and Collier Road South (Regional Road 56).</p> <p>The NRTMP also recommended a Complete Streets approach to help move the Region to a more multi-modal transportation network. Two supporting reports were produced as part of the TMP: <i>Complete Streets Vision and Directions</i> and <i>Design Guidelines for Complete Streets</i>.</p>

Document	Overview and Relevance
	<p>The goals, strategies, and policies within the NRTMP will inform the direction of the Thorold TMP. The Complete Streets approach will be of particular importance and will inform the implementation of Complete Streets within Thorold.</p> <p>The Niagara Region Travel Demand Forecasting Model developed for the NRTMP will provide the basis for the demand forecasting in the Thorold TMP.</p> <p>The Region’s Strategic Cycling Network will form the foundation of Thorold’s cycling network.</p>
<p>Complete Streets for Niagara Model Policy Handbook, 2013</p>	<p>This handbook is intended to be a foundation for the implementation of Complete Streets through official plans, secondary plans and transportation master plans. The Complete Street model policies outlined are derived from existing local policies and best practices from other communities. The policies encourage actions and investments that can contribute to healthy communities while at the same time addressing provincial interests in the Planning Act. The Handbook identifies potential goals, objectives and best practices designed to enhance land use and transportation policies in Niagara Region to support Complete Streets.</p> <p>Elements of the Handbook will serve as the foundation to develop Complete Streets strategies for Thorold.</p>
<p>Niagara Region GO Hub and Transit Station Study, 2018</p>	<p>The GO Hub and Transit Station Study resulted in recommendations for four secondary plans. The most relevant to Thorold relates to the St. Catharines GO station. This St. Catharines secondary plan has been approved as an Official Plan Amendment and inserted into the City of St. Catharines Official Plan. The secondary plan contains guidelines and policies for the redevelopment of the area directly surrounding the GO station and seeks to improve access to the GO station.</p> <p>The importance of achieving a regionally-integrated transportation network becomes more important with the newly introduced year-round GO Transit service between Niagara Region and Toronto. The GO Hub Study will inform connections for all modes to/from the St. Catharines GO Station.</p>
<p>Brock District Plan, 2016</p>	<p>The Brock District Plan sets a framework for the planning, design and development of a vibrant university community around Brock University on both sides of the St. Catharines-Thorold border. The long-term District Plan endeavors to transform the area into a clean, green, accessible, and sustainable neighbourhood. Transportation is envisioned as a multi-modal system with increased access and internal circulation for pedestrians and cyclists.</p>

Document	Overview and Relevance
	<p>The vision, objectives, and planned land uses of the Brock District Plan will inform the development of the Thorold TMP and recommended projects.</p>
Municipal Plans and Policies	
<p>City of Thorold Official Plan, 2016</p>	<p>Thorold’s Official Plan (OP) provides the basis for managing the City’s growth and required infrastructure for the period up to 2031. One of the objectives of the OP is “to encourage the establishment of a Regionally integrated transportation system, including active transportation that safely and efficiently accommodates the broadest number of transportation modes”.</p> <p>Transportation is further addressed through general policies relating to the development process. These policies include direction related to access management, right-of-way widths, transportation study requirements, truck traffic management, public transit, and active transportation.</p> <p>The Thorold TMP will be informed by the vision, goals, and strategic objectives of the Thorold Official Plan. Further, the land-use planning framework, including future growth areas and land uses, will be an important input into assessment of future transportation needs.</p>
<p>City of Thorold Corporate Strategic Plan 2012-2015</p>	<p>The Corporate Strategic Plan sets out the vision, mission, values, goals, and action items for the City of Thorold.</p> <p>The City’s strategic vision: “The City of Thorold is a thriving, dynamic Canadian city committed to strong community values and a high quality of life anchored in safe, inclusive, prosperous and well-planned neighbourhoods and business communities.”</p> <p>The Strategic Plan values sustainability, financial accountability, infrastructure and asset management, and community well-being. More specifically, goals and action items defined within the Strategic Plan relate to increasing the attractiveness of active transportation, fostering community improvements, sustaining and improving infrastructure and assets, adopting a “think green” culture, and meeting accessibility requirements.</p> <p>The vision, mission, values, and goals of the Strategic Plan will inform the direction of the Thorold TMP.</p>
<p>City of Thorold Accessibility Policy, 2016</p>	<p>The Accessibility Policy sets out the responsibilities of all persons in the employ of the municipality, its elected officials and those serving the municipality in an appointed capacity. Transportation aspects of the policy relate to transit service, with policies surrounding fare equity, fares for support persons, announcement procedures, accessibility features and equipment, boarding policies, route stop accommodations, priority seating, and bus stops and shelters.</p>

Document	Overview and Relevance
	<p>The Thorold TMP will adhere to the City of Thorold Accessibility Policy, which states that the “Municipality’s transportation system will be in compliance with the Integrated Accessibility Standards as applicable.</p>
<p>Joint Accessibility Advisory Committee 2018-2022 Accessibility Plan, 2017</p>	<p>The Joint Accessibility Advisory Committee (JAAC) is comprised of representatives from the municipalities of Thorold, Lincoln, West Lincoln, Pelham, Niagara-on-the-Lake, and Grimsby. The Accessibility Plan addresses a variety of service delivery areas including transportation standards, design of public space standards, and an action plan to meet the provincial regulations.</p> <p>Transportation actions within the Accessibility Plan are focused entirely on transit service accessibility. The Thorold TMP will adhere to the Accessibility Plan, and comply with the policies and requirements of the Accessibility for Ontarians with Disabilities Act (AODA).</p>
<p>Thorold Bicycle Route Feasibility Study, 2012</p>	<p>The Thorold Bicycle Route Feasibility Study developed a planned cycling network in the City of Thorold. The Study examined a long list of candidate routes and selected the most feasible route locations. The Study also provided high-level analysis on the appropriate facility types for each route and a 3-phase approach to implementation.</p> <p>The Route Feasibility Study will form the starting point for the development of Thorold’s updated cycling network.</p>
<p>Downtown Thorold Streetscape Master Plan, 2014</p>	<p>The Downtown Thorold Streetscape Master Plan is aimed at improving the downtown’s public realm to assist in creating a healthy, vibrant, active, and pedestrian-friendly destination within the City. It included an inventory of existing conditions, a vision for the future, detailed streetscape plans, a new linear park concept, and an implementation plan.</p> <p>The Streetscape Master Plan will inform key decisions within the TMP network development, as it presents opportunities to bundle active transportation improvements along with other infrastructure work, including improved pedestrian realm, on-street cycling facilities, and off-street trails through the linear park concept.</p>
<p>Roads Asset Management Plan, 2019, and Roads Conditions Assessment, 2018</p>	<p>The City’s Asset Management Plan is a recent study assessing the current condition of Thorold roads and presents a five-year maintenance and refurbishment plan.</p> <p>The Asset Management Plan will be referenced for to identify opportunities to coordinate roadworks with new active transportation infrastructure. Refurbishing and reconstructing roads present an opportunity to reassess the corridor’s overall use and bundle these necessary works with cycling and/or pedestrian facilities, where appropriate, to reduce overall costs.</p>

Document	Overview and Relevance
Thorold Downtown Parking Strategy and Pilot Parking Program	<p>The Downtown Parking Strategy provides a united, consistent approach to managing on-street and off-street parking in downtown Thorold through pricing, permitting, and time restrictions. The City’s objective is to manage parking in a financially sustainable manner that meets the needs of downtown residents, customers, and businesses, and ultimately promotes a vibrant downtown.</p> <p>The Parking Strategy will inform TMP recommendations in the downtown area.</p>

Four additional plans and traffic studies provide greater detail for growth areas in Thorold. These are:

- The Neighbourhoods of Rolling Meadows Secondary Plan, 2008
- Artisan Ridge Development Traffic Impact Study, 2014 and 2015 update
- Port Robinson Road Residential Development Traffic Impact Study, 2008
- Hansler Heights Subdivision Transportation Impact Study, 2016

These documents include land use plans, population and employment projections for their specific sub-areas, and expected traffic impacts with proposed growth.

These documents will be used to inform the assessment of future transportation needs in the City of Thorold.

3 Transportation System Overview

This section provides an overview of the major components of Thorold's transportation system and highlights any performance issues where relevant.

3.1 Roads

3.1.1 Existing Road Network

The road network in Thorold consists of Provincial highways, Regional roads, and municipal roads. The majority of the road network in Thorold is comprised of municipal roads under the City's jurisdiction. Municipal roads are further classified as arterial, collector, local, and private roads. Exhibit 3.1 shows the existing roadway network in Thorold by jurisdiction and classification.

The main regional roads, Regional Road 20 (Canboro Road-Lundy's Lane), Regional Road 50 (Merrittville Highway), Regional Road 56 (Collier Road) and Regional Road 82 (Allanport Road), primarily serve inter-municipal traffic, connecting Thorold with its neighbours.

Provincial Highway 406 runs north-south through Thorold, with interchanges at St. David's Road/Highway 58, RR 67 (Beaverdams Road), Regional Road 20, and Regional Road 37 (Merritt Road). Highway 406 originates at Queen Elizabeth Way in St. Catharines and terminates in Welland at East Main Street. A second controlled-access highway, Highway 58, originates at Highway 406 and St. David's Road and proceeds easterly, passing under the Welland Canal at the Thorold Tunnel.

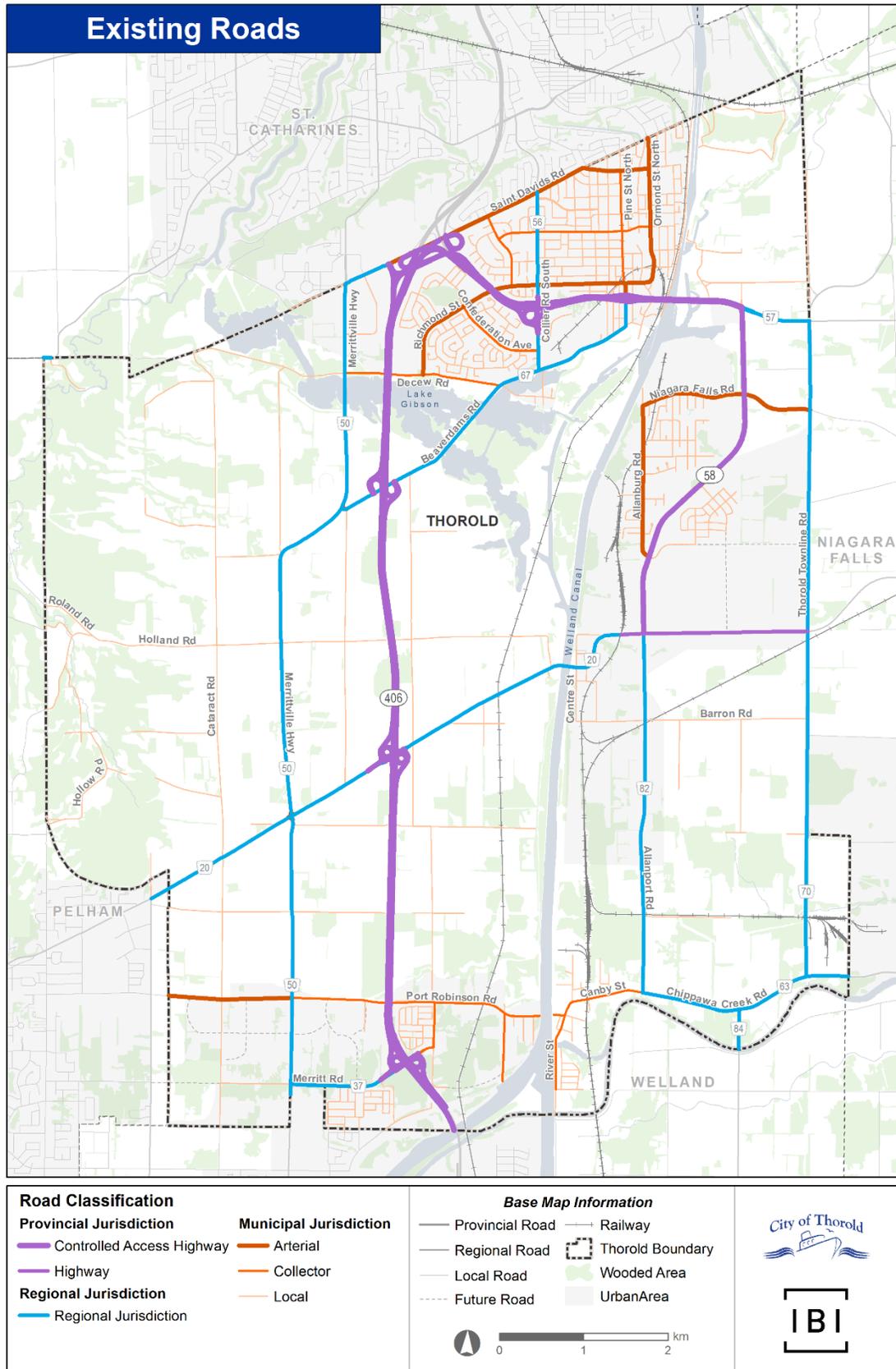
There are only two Canal crossings in Thorold, one at Thorold Tunnel (Highway 58) and the second at the Allanburg Bridge on Regional Road 20.

Proposed Projects

Through the Niagara Region TMP, three Regional corridors within Thorold were identified for capacity or operational improvements: Merritt Road (Regional Road 37), Regional Road 20 and Collier Road (Regional Road 56).

There are no planned road network expansion projects in the City's current Capital Program.

Exhibit 3.1: Existing Road Network by Class and Jurisdiction



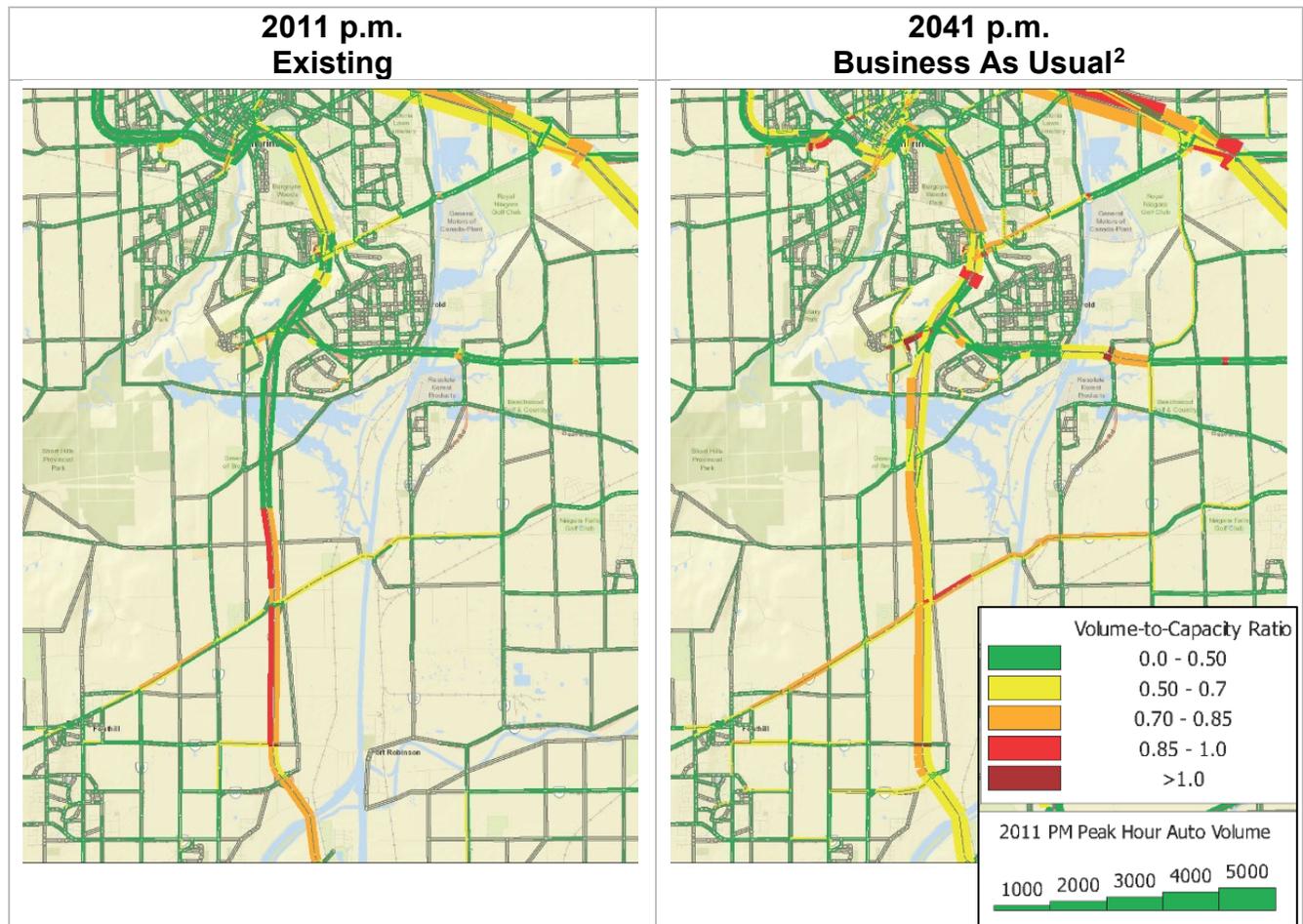
3.1.2 Road Network Performance

The network serves current traffic volumes well and, based on forecasted travel demands, will continue to do so through the 2041 time horizon. There remains a few localized congestion issues, however. These include:

- Highway 58 at Welland Canal
- Regional Road 20 near Highway 406
- Sir Isaac Brock and Highway 406
- Congestion around Port Robinson West

The modelled volume-to-capacity ratios, where higher ratios are an indicator of congestion, are shown in Exhibit 3.2 and Exhibit 3.3.¹

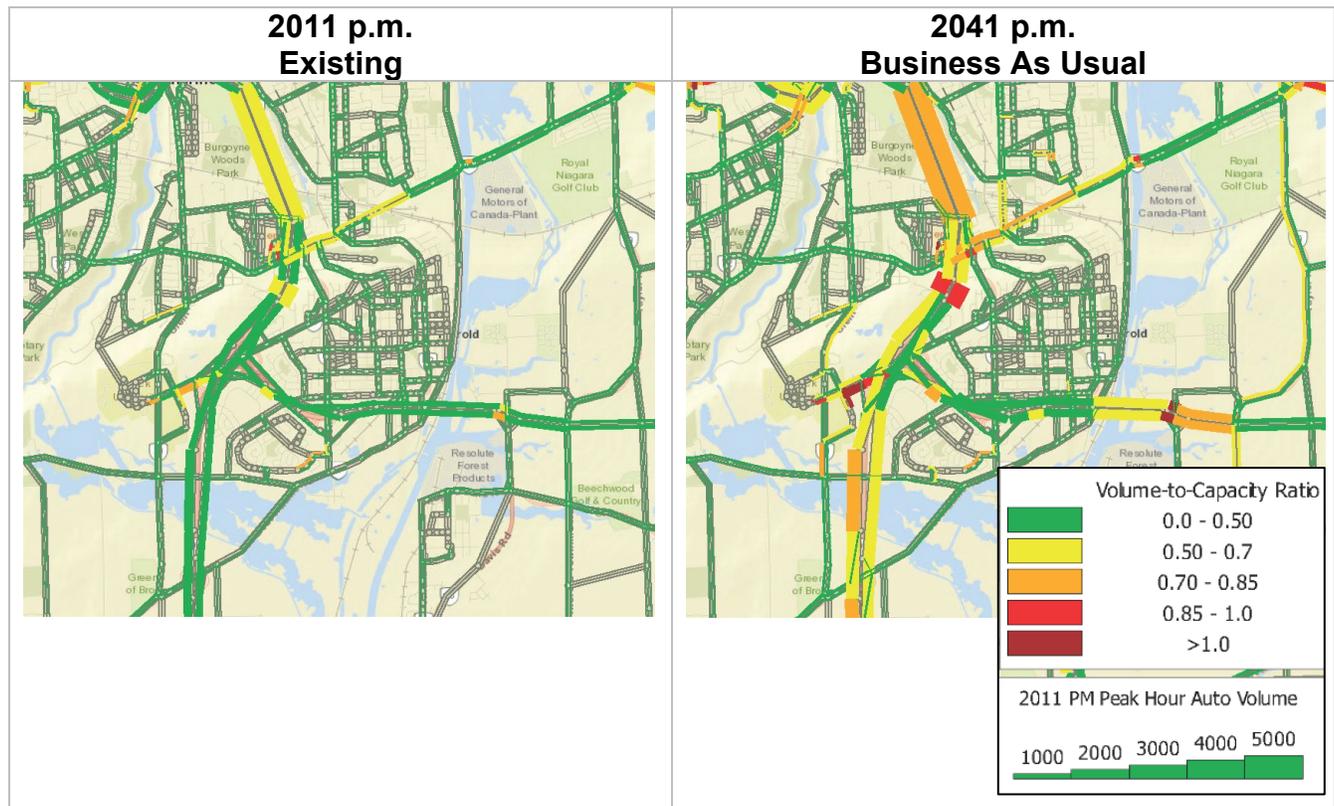
Exhibit 3.2: Niagara Model Forecasts



¹ Note that the model has a base year of 2011, which predates the widening of Highway 406.

² The Business as Usual scenario includes: twinning of Garden City Skyway; widening of Regional Road 20; capacity improvements on Regional Road 56; connection and widening of Merritt Road.

Exhibit 3.3: Niagara Model Forecasts (Thorold Proper Close-Up)



3.1.3 Collision Hotspots

Collision data was provided by the City of Thorold. Exhibit 3.4 and Exhibit 3.5 summarize the intersections and corridors that recorded the highest number of incidents in the 10-year period from 2008 through 2017.

Exhibit 3.4: Intersections with the Most Reported Collisions, 2008 through 2017

Intersection	Type	Collisions
Pine Street S at Richmond Street	Signalized	30
Pine Street S at Sullivan Avenue	Signalized	21
Clairmont Street at Ormond Street S	Signalized	16
Albert Street W at Pine Street N/S	4-way stop	10
Albert Street E/W at Front Street N/S	4-way stop	9
Clairmont St at Front Street S and Sullivan Avenue	4-way stop	8
Ormond Street N at Regent Street	Signalized	7
Queen Street S at Sullivan Avenue	4-way stop	5
Cataract Road at Wiley Road	1-way stop	4

Source: Niagara Region

Of the 110 collisions reported at these nine intersections, three involved cyclists and seven involved pedestrians. One collision, involving a pedestrian, was fatal. Fourteen collisions resulted in non-fatal injuries.

Exhibit 3.5: Corridors with the Most Reported Collisions, 2008 through 2017

Corridor	Collisions
Cataract Road (Eller Road to Wiley Road)	17
Highway 58 (Davis Road to Taylor Road)	16
Schmon Parkway (Sir Isaac Brock Way to Merrittville Highway)	13
Lundy's Lane (Thorold Townline Road to Barker Parkway)	13
Cataract Road (Wiley Road to Decew Road)	13
Beaverdams Road (Thorold Townline Road to Highway 58)	11
Front Street N (Albert St E/W to Front Street S and Regent Street)	10
Baxter Crescent (Capri Street to Capri Street)	10
Ormond Street S (Clairmont Street to Portland Street)	9
Lundy's Lane (Centre Street to Service Road W)	9

Source: Niagara Region

Of the 121 collisions mid-block collisions reported in the 10-year period, one involved a pedestrian and 19 collisions resulted in non-fatal injuries.

3.1.4 Public and Stakeholder Feedback

Roads-related challenges identified from public and stakeholder feedback included:

- poor condition of some roads;
- a lack of parking in the downtown core; and
- poor traffic flow due to signal timing on some corridors.

3.2 Transit Network

Transit within, to, and from the City of Thorold is operated by two operators – St. Catharines Transit Commission for local service and Niagara Region Transit for regional service. Existing transit routes in Thorold are shown in Exhibit 3.7.

Access to GO Transit and Welland Transit is also possible, through connections outside of the city limits.

3.2.1 Existing Transit Service

Local Service

Conventional public transit service within the northern urban areas of Thorold is operated by St. Catharines Transit Commission. The Towpath Transit Terminal is the focus of transit service in Thorold, where the three routes converge:

- 320/420 Thorold – Pen Centre (with connection to Brock University)
- 321/421 Confederation – Brock
- 322 Thorold South

The 300 series routes provide daytime service while the 400 series routes provide evening, weekend and holiday service. The service periods and frequency of service for the Thorold routes are summarized in Exhibit 3.6

Exhibit 3.6: Thorold Transit Routes

	Frequency				
	Weekday	Evening	Saturday	Sunday	Holiday
Route 320 / 420 Thorold – Pen Centre	30 min	60 min	60 min	60 min	60 min
Route 321/421 Confederation – Brock	Fall, Winter: 60 min Summer: 60 min during peak	Fall, Winter: 60 min Summer: No service			
Route 322 Thorold South	30 min	No service	30 min	No service	No service

The service frequency and span of the local routes are slightly higher than most similar-sized communities (e.g. Brockville, Cobourg, Midland, and Port Hope) and consistent with larger communities (e.g. Orangeville, Orillia, Woodstock).

Three additional St Catharines Transit routes travel along Sir Isaac Brock Way-St. David’s Road, Thorold’s northern border:

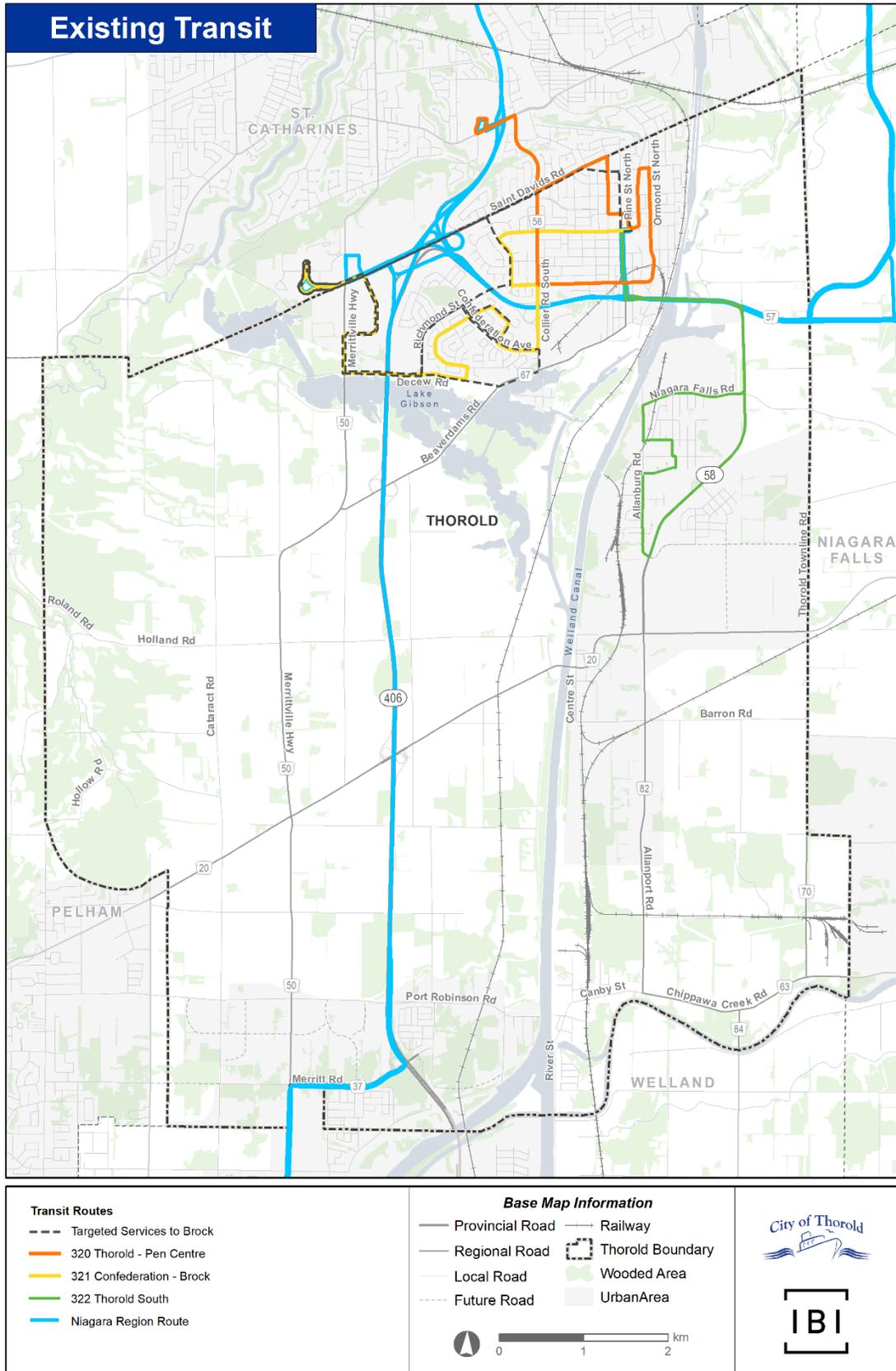
- 316/416 Brock - Glenridge
- 335/435 Brock – Pen Centre
- 336/436 Brock – Glendale – Pen Centre

These additional routes provide service between Brock University and St. Catharines and provides connections to Thorold only along the St. David’s Road/Sir Isaac Brock Way. Route 316/416 provides service to downtown St. Catharines, while Routes 335 and 336 are destined for the Pen Centre. These routes provide service as frequently as every 15 minutes.

Additionally, Route 311 Hartzel Road briefly crosses over the Thorold border to turn around at St. David Street, where connections are possible with Route 320 Thorold – Pen Centre. Route 311 provides service north to Queenston Street in St. Catharines and further west into downtown St. Catharines.

Transit service is not available in the southern areas of Thorold, though the City of Welland operates routes roughly 500 metres south of the cities' shared border. Welland Transit operates a shuttle to Brock University during the school year, however it does not stop in Thorold.

Exhibit 3.7: Existing Conventional Transit Service in Thorold



Targeted Service to Brock University

Several routes provide targeted service to Brock University and are paid for by the Brock University Student Union. These routes include:

- Routes 324 and 331 – with service every 30 minutes on weekdays from 7:00 a.m. to 6:00 p.m.;
- Route 431 – with weekday evening service every 30 minutes (but only hourly on Fridays) from 7:00p.m. to 10:30 p.m.; and
- Route 432 – with weekday evening service every 30 minutes from 7:00 p.m. to 11:50 p.m.

Service on these routes is significantly reduced in the summer months.

Regional Service

Niagara Region Transit operates three routes that travel through Thorold.

Route 50/55 provides service between St. Catharines and Niagara Falls, via Thorold with stops at downtown Thorold, Thorold City Hall/Niagara Region Headquarters, and Brock University. Buses are scheduled every hour, Monday through Saturday.

Routes 60A/65A Express provides service between Welland and Niagara Falls. It passes through Thorold but does not stop.

Route 70/75 provides service between Welland and St. Catharines, stopping at only at Brock University, just outside of Thorold.

Specialized Transit

Specialized transit is operated by St. Catharines Transit Commission for local trips and Niagara Region Transit for inter-municipal trips. Specialized transit services are available to Thorold residents who meet eligibility requirements.

GO Transit

Though GO Transit does not provide service within Thorold, buses and trains can be accessed in neighbouring St. Catharines. Regional train service to Toronto began in January 2019, offering peak period and peak direction service only. The St. Catharines GO Train station is located 5 km from downtown Thorold (straight line distance) but requires a drive of 8-10 km (12-13 minutes) depending on the route taken.

GO buses can be accessed from Fairview Mall, with service to Niagara Falls or Burlington GO station, with connections to all-day GO train service on the Lakeshore West line.

3.2.2 Transit System Performance

Transit mode share in Thorold is low, with transit accounting for only 2% of daily trips and 1% of morning work trips.³

The public and stakeholders expressed concern about low frequency of service, limited service coverage, a lack of direct connections to major destinations, and limited weekend and summer service.

There are several challenges associated with providing transit service in Thorold. Thorold is geographically large and, outside of the central area, population densities are very low. Growth areas in Thorold are concentrated along its boundaries and the Canal and highways create barriers that can make direct transit routing challenging.

The transit service also has to meet the travel needs of distinct demographic groups. Ridership is highest among post-secondary students and much of the service is tailored to serve demand during the academic year; there is a steep drop in service during the summer months. While students represent the largest cohort of transit riders, older adults (60-64 years of age) is the fastest-growing cohort in Thorold.

3.2.3 Public and Stakeholder Feedback

Transit-related issues identified through public and stakeholder feedback included:

- poor on-time performance;
- infrequent buses and long wait times;
- reduced service hours on weekends and reduced routes during the summer months;
- too many transfers required to complete a trip; and
- limited service to some areas of Thorold.

Opportunities for to improve transit conditions to encourage increased ridership included:

- better network coverage;
- more direct connections;
- more frequent service;
- year-round service; and
- better access to GO buses and trains.

³ Transportation Tomorrow Survey, 2016.

3.3 Active Transportation

The active transportation (AT) network is comprised of off-street trails, sidewalks, and on-street cycling lanes that support walking and cycling. Cycling is a popular recreational activity for residents and visitors to the region.

3.3.1 Existing AT Network

Sidewalks

Sidewalks are present within the urban areas of Thorold along one or both sides of most arterial and collector roads. Exhibit 3.8 shows gaps in the sidewalk network within the designated urban areas on arterial and collector roads, and local roads near schools or on transit routes. There are approximately 28.9 km of gaps identified on municipal roads, 21.0 km of sidewalk gaps on Regional arterials and 10.5 km of gaps on provincial highways. Note that these gaps include 24.6 km of gaps in future growth areas (e.g. Port Robinson West, Rolling Meadows) which are of predominantly rural character.

Sidewalks are the responsibility of the City to construct and maintain, on both regional and local roads.

Off-street Trails and Multi-use Trails

The most significant trail in Thorold is the Welland Canal Trail on the west side of the Welland Canal. This trail connects Lake Ontario to Lake Erie through the municipalities of Port Colborne, Welland, Thorold and St. Catharines.

Unofficially, the trail along the former railway line between Beaverdams Road and Fonthill connects to the system of Steve Bauer Trails in the Town of Pelham. This trail appears to be in use but is not maintained by the City of Thorold.

Multi-use paths along road rights-of-way are provided in three locations:

- Along the west side of Front Street North between Townline Road East and Regent Street;
- Along the east side of Merrittville Highway (Regional Road 50) between Sir Isaac Brock Way and Decew Road; and
- Decew Road between Merrittville Highway and Beaverdams Road.

Additionally, a multi-use trail is under construction along Sir Isaac Brock Parkway/St. David's Road from Merrittville Highway to Collier Road.

Trails and paths are the responsibility of the City to construct and maintain, on both regional and local roads.

The existing cycling network, including off-road trails, is shown in Exhibit 3.9.

On-Street Cycling

Painted bicycle lanes are currently provided on four streets in Thorold:

- Confederation Avenue between Collier Road and Richmond Street;
- Collier Road between Elgin Street and Richmond Street;
- Richmond Street between Confederation Avenue and Queen Street;
and
- A short section of Sir Isaac Brock Way near Brock University.

Paved shoulders are provided in a few rural locations.

The existing cycling network, including on-street cycling facilities, is shown in Exhibit 3.9.

Proposed Expansion

The 2017 Niagara Region Transportation Master Plan included a Regional Strategic Cycling Network which proposed new cycling infrastructure on Regional Roads, Municipal Roads, and off-road trails to be completed within 10 years. Several projects are proposed within Thorold.

An Environmental Assessment is underway for St. David's Road east of Collier Street which includes a focus on active transportation.

3.3.2 AT Network Performance

As shown Thorold's current walking and cycling infrastructure is limited. The current active transportation mode share is 3%⁴ for both daily and morning peak period work trips. However, these statistics do not include the popularity of the Welland Canal Trail for recreational by both residents and visitors to the region.

⁴ Transportation Tomorrow Survey, 2016.

Exhibit 3.8: Gaps in Sidewalks along Arterial and Collector Roads

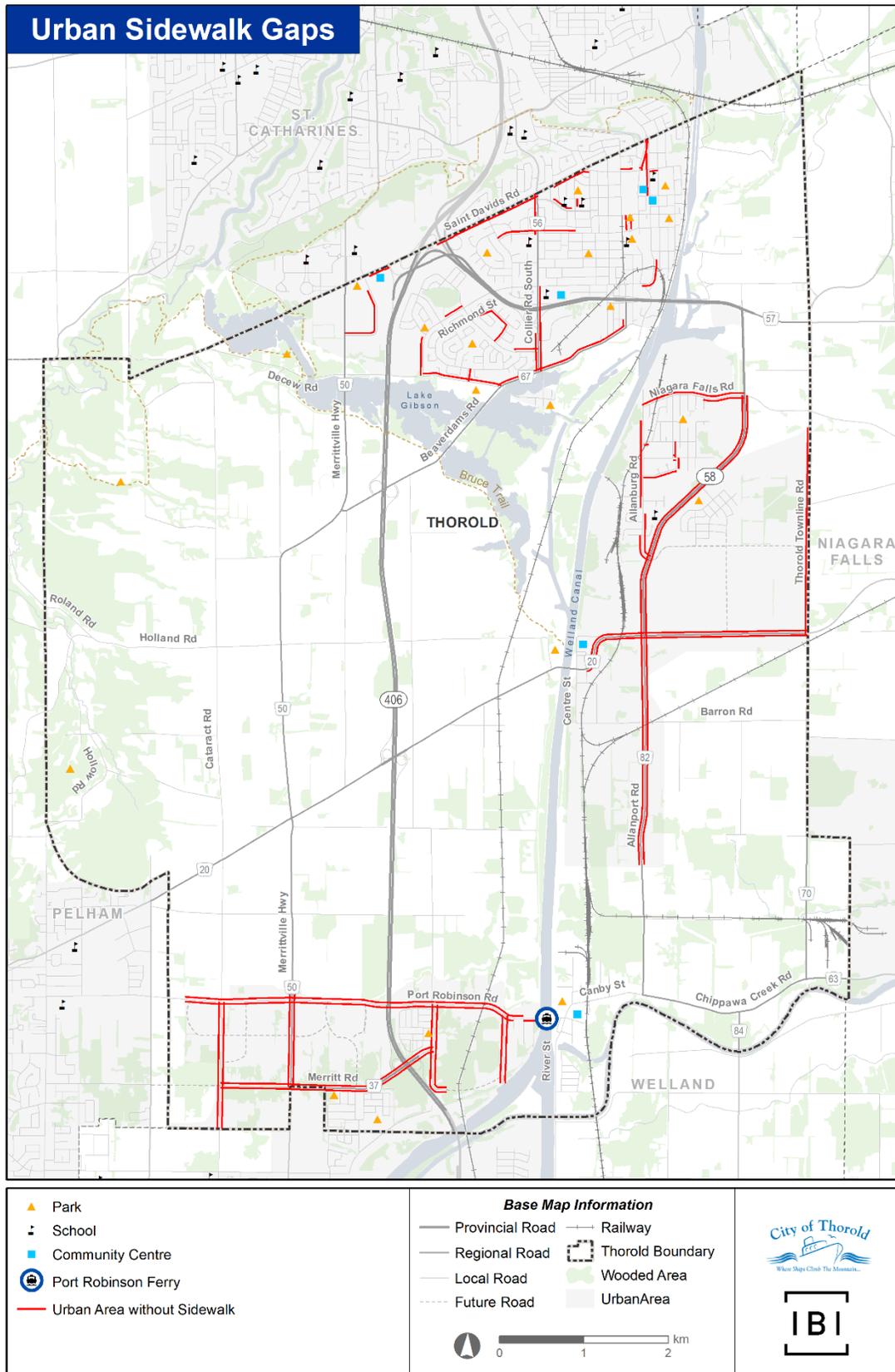
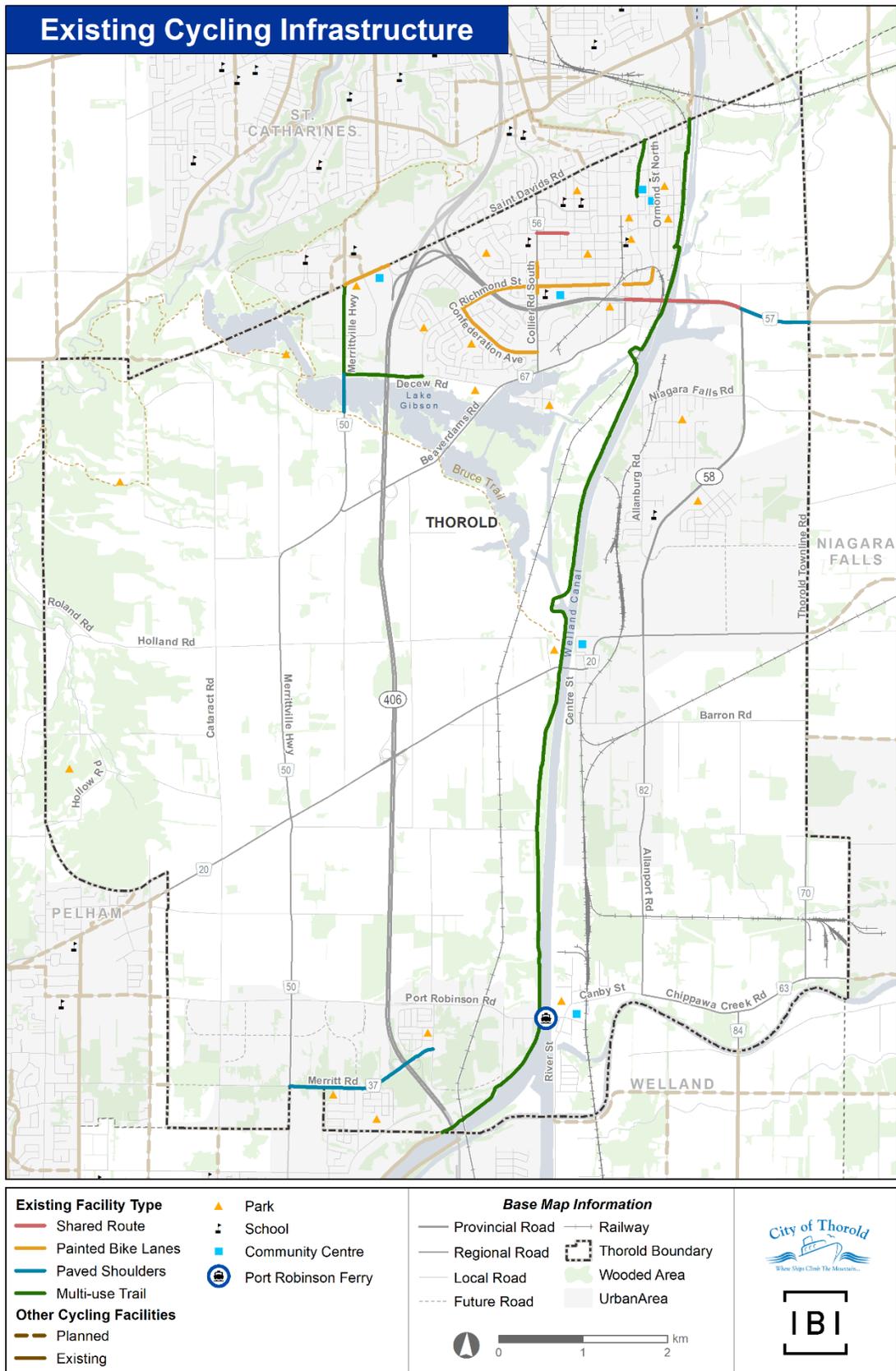


Exhibit 3.9: Existing Cycling Network



3.3.3 Public and Stakeholder Feedback

Active transportation-related challenges identified by the public and stakeholders included:

- Pedestrian safety concerns including the lack of crosswalks and sidewalks, especially in South Thorold;
- sidewalks in a poor state of repair;
- challenges with winter maintenance;
- lack of safe space for cyclists; and
- lack of connectivity between Thorold South and the rest of the city.

Opportunities for to improve active transportation conditions to encourage use of these sustainable modes included:

- more and better sidewalks;
- better snow removal;
- more pedestrian amenities (benches, better lighting);
- safer street environment (reduce number and/or speed of vehicles); and
- more dedicated cycling infrastructure.

4 Growth and Transportation Trends

This Section presents Thorold's population and employment forecasts and transportation trends.

4.1 Thorold at a Glance

The City of Thorold, home to 18,801 residents,⁵ is one of twelve lower-tier municipalities in Niagara Region. Thorold covers 83 km² of land and shares borders with St. Catharines to the north, Niagara Falls to the east, Welland to the south, and Pelham to the west.

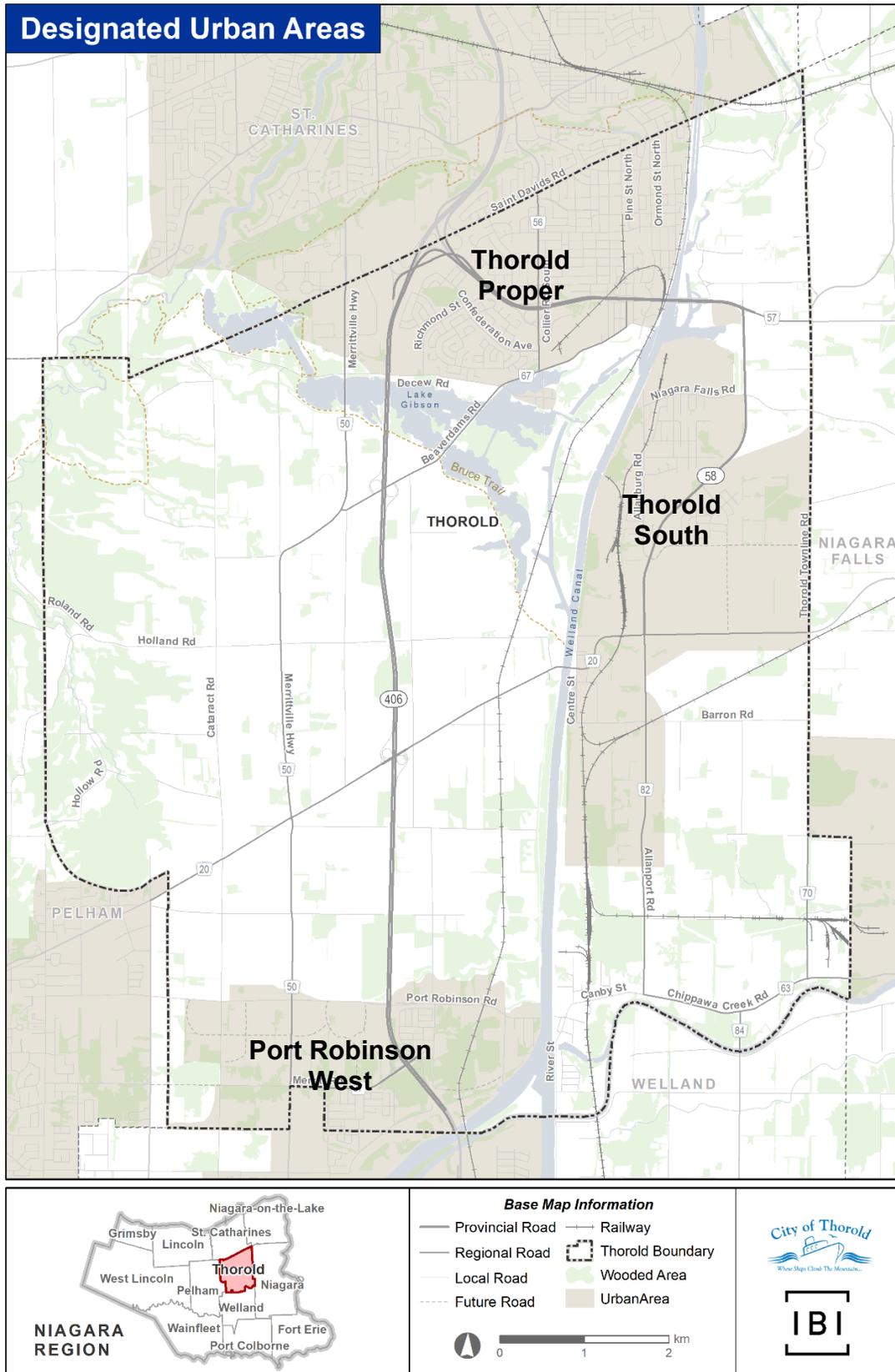
In 2016, there were 7,465 households in Thorold, with a median household income of \$64,650. In terms of employment, 7,318 people work in Thorold.

The city is made up largely of undeveloped land, including protected countryside within the Greenbelt Area. The City's designated urban areas are shown in Exhibit 4.1. There are three distinct urban areas in Thorold:

- **Thorold Proper** – The urban area in the northern part of Thorold west of the Canal includes the historic downtown, including its traditional main street, the majority of the City's population, and the City's main intensification areas.
- **Thorold South** – Also in the northern part of the City, but east of the Canal, Thorold South is comprised of lower density residential developments and industrial land uses. It contains one of Thorold's designated growth areas, the Neighbourhoods of Rolling Meadows which is currently under construction.
- **Port Robinson West** – At the far south neighbouring the City of Welland, Port Robinson West is a future growth area currently in the planning and construction stages.

⁵ 2016 Census.

Exhibit 4.1: City of Thorold Designated Urban Areas



4.2 Population/Employment Projections and Trends

The City of Thorold will change substantially over the coming decades as growth and demographic changes influence land use and transportation.

4.2.1 Significant Population Growth is Planned

Thorold’s population increased slightly over the period of 2006 through 2016, and it is projected to continue grow through to 2031 and 2041. The Thorold Official Plan (2016), based on the Niagara Region Official Plan (2014), forecasts a population of 24,086 in 2031, a growth of 28%, or 1.87% per year. The draft Niagara Region Municipal Comprehensive Review forecasts a population of over 28,000 by 2041 for Thorold.

Exhibit 4.2 shows the historical and forecasted population from 2006 to 2041.

Exhibit 4.2: Historical and Forecasted Population for the City of Thorold

Population	2006	2011	2016	2021	2026	2031	2036	2041
Census	18,224	17,931	18,801	-	-	-	-	-
Thorold Official Plan	18,900	19,200	20,900	22,000	23,100	24,086	-	-
Niagara Region MCR	18,880	18,410	18,790	19,680	21,500	23,850	26,460	28,470

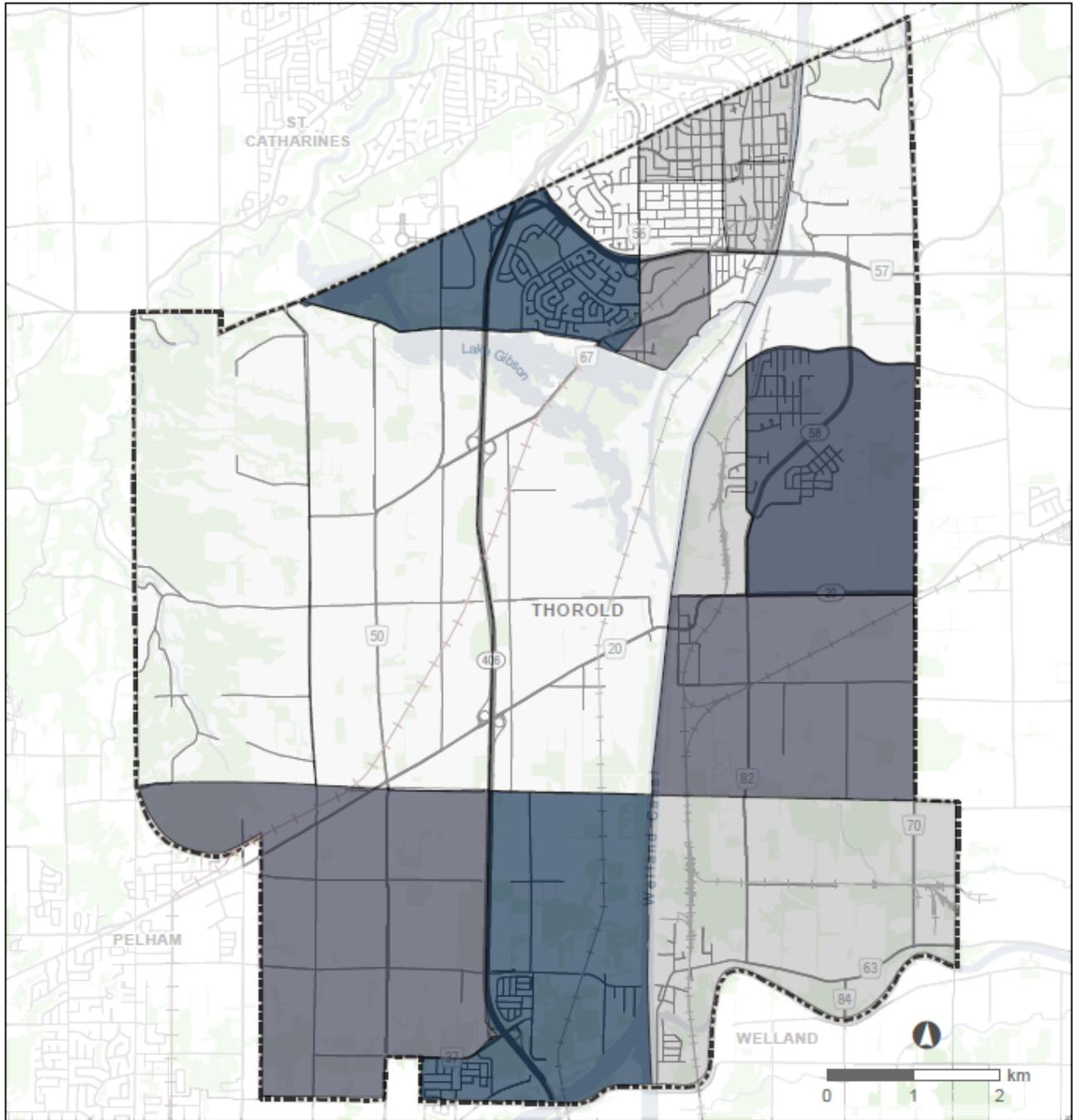
Sources: Historical populations from Statistics Canada, Census of Population. Population forecasts from Thorold Official Plan and Niagara Region Municipal Comprehensive Review (2016 draft).

Population and employment forecasts are critical to understanding future transportation needs and they serve as input to the assessment of future travel demands. Growth in population will influence overall travel demand, and where that growth is located within Thorold will influence both how people travel and where people travel. Designated urban areas, which are primarily agricultural now will transition to urban subdivisions, requiring new transportation facilities and services and connections to existing transportation facilities and services.

Of the anticipated population growth to 2041, 44% is planned to occur in the Port Robinson West Secondary Plan Area in the City’s south end. Thorold South, east of the Welland Canal, is also anticipated to accommodate significant population growth. Exhibit 4.3 shows the geographic distribution of the projected population growth.

As new development occurs, the growth areas will transition from largely rural, agricultural lands to urban communities, putting increased pressure on the transportation network.

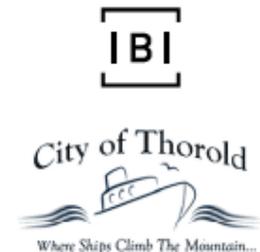
Exhibit 4.3: Projected Change in Population by Traffic Zone



-  Thorold Boundary
-  Wooded Area
-  Existing Railway

2016 - 2041 Projected Change in Population and Employment by Traffic Zone

- | | |
|---|---|
|  1 - 100 |  501 - 1000 |
|  101 - 250 |  1001 - 2000 |
|  251 - 500 |  Greater than 2001 |



Source: Niagara Region Travel Demand Model

4.2.2 Thorold Residents are Typically Younger than Niagara Region Residents

A common concern for cities across Ontario is that of a rapidly aging population. Thorold’s median age of 41.1 years (as of 2016) has increased by 3% since 2006 but has decreased since 2011. Thorold’s median age has consistently been lower than that of Niagara Region. Up until 2016, however, Thorold was on average older than that of Ontario and Canada. Exhibit 4.4 shows the median ages over the four previous Census programs for the City of Thorold, Niagara Region, Ontario, and Canada.

Exhibit 4.4: Median Age, 2001-2016.

Area	2001	2006	2011	2016
City of Thorold	38.0	39.8	41.4	41.1
Niagara Region	40.0	41.9	44.1	45.7
Ontario	37.2	39.0	40.4	41.3
Canada	37.6	39.5	40.6	41.2

Source: Statistics Canada, Census of Population

Thorold has been aging at a slower rate than Niagara Region, Ontario, and Canada. Exhibit 4.5 shows the percentage change over the previous 5 years, 10 years, and 15 years for Thorold, Niagara Region, Ontario, and Canada.

Exhibit 4.5: Change in Median Age, 2001-2016

Area	2001 to 2016	2006 to 2016	2011 to 2016
City of Thorold	8%	3%	-1%
Niagara Region	14%	9%	4%
Ontario	11%	6%	2%
Canada	10%	4%	1%

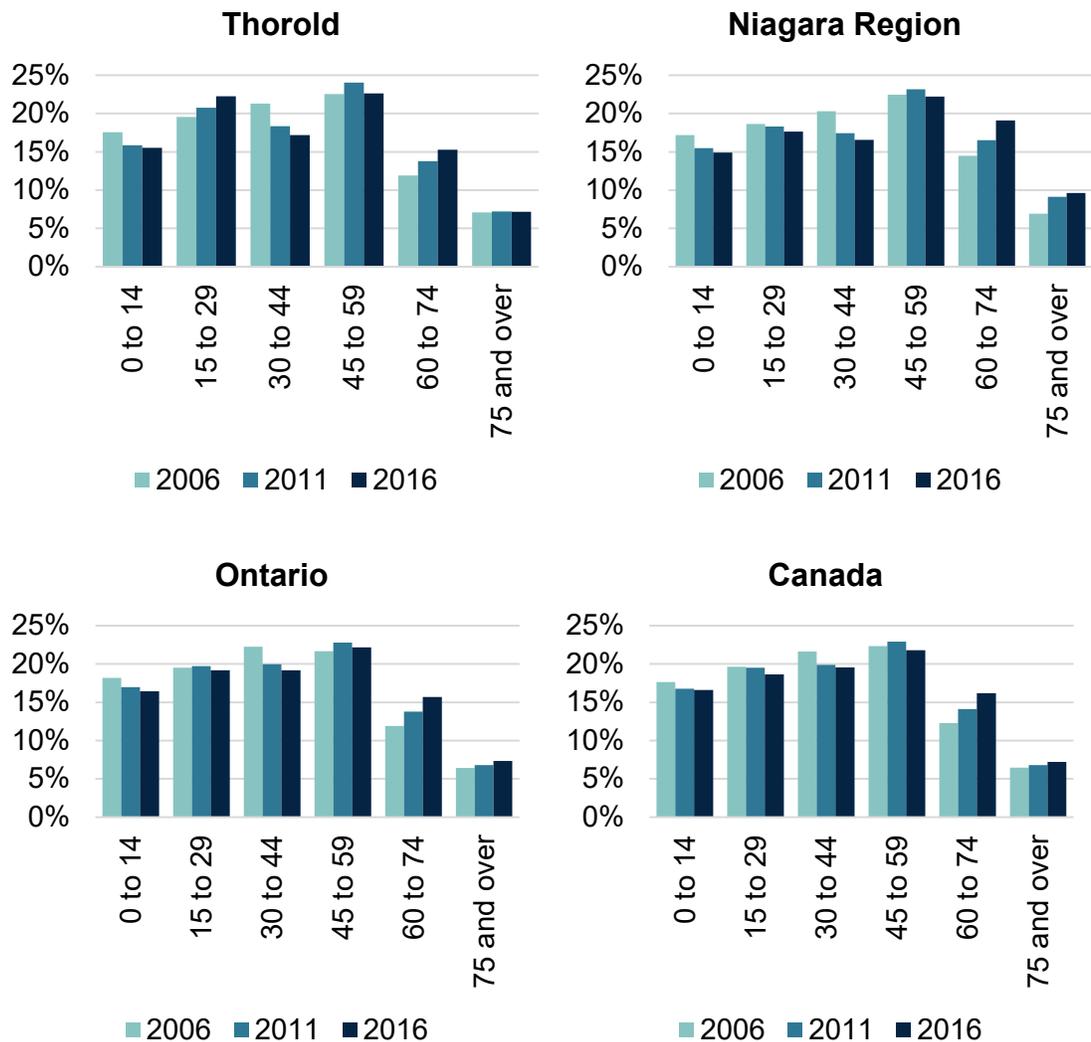
Source: Statistics Canada, Census of Population

Thorold’s population has been able to age at a slower rate as a result of a significant growth in the ages 15 to 29 group, reflecting a higher proportion of youth and young adults likely due to the proximity of Brock University, as shown in Exhibit 4.6. This has not been true in Niagara Region, Ontario, or Canada. Growth in the 60 to 74 age cohort is also slower in Thorold than it is across the region, province, and country.

Travel choices are a factor of age. Children and youth are too young to drive, and young adults may not have access to a personal vehicle. Alternative modes such as public transit, cycling and walking typically have a higher mode share for youth and young adults.

Although seniors may be more reliant on transit due to health or economic reasons, this group is also increasingly active in their retirement, making more daily trips than in the past.

Exhibit 4.6: Comparison of Aging Trends by Age Group, 2006 to 2016



4.2.3 Employment is Rebounding, Expected to Grow

Data from the Transportation Tomorrow Survey (a recurring household travel survey) and the Niagara Region Municipal Comprehensive Review (2016 draft) indicate that the number of jobs located within Thorold fell sharply between 2006 and 2011 but had partially rebounded by 2016, as shown in Exhibit 4.7. The Thorold Official Plan forecasts continued growth in the number of jobs in Thorold to 8,690 by 2031. The Draft Municipal Comprehensive Review forecasts a higher rate of growth to 9,360 jobs by 2031 and 10,660 by 2041.

Exhibit 4.7: Historical and forecasted employment for the City of Thorold

Employment	2006	2011	2016	2021	2026	2031	2036	2041
Transportation Tomorrow Survey	7,890	6,741	7,316	-	-	-	-	-
Thorold Official Plan	7,280	7,670	7,890	8,130	8,390	8,690	-	-
Niagara Region MCR	8,340	7,360	8,070	8,480	8,870	9,390	9,960	10,660

Source: Historical data derived from Transportation Tomorrow Survey, 2006-2016. Forecasts from Thorold Official Plan and Niagara Region Municipal Comprehensive Review (2016 draft).

Future jobs are anticipated to be different from those of the past. Significant job losses have occurred in cities across Niagara Region over the last decades, many of those jobs in manufacturing and trades. A higher proportion of future jobs will be in sales, services and professional fields.

The number and types of jobs in Thorold, and surrounding areas, will influence where people choose to relocate. Attracting jobs to Thorold will also attract new residents to the community.

4.3 Transportation Trends

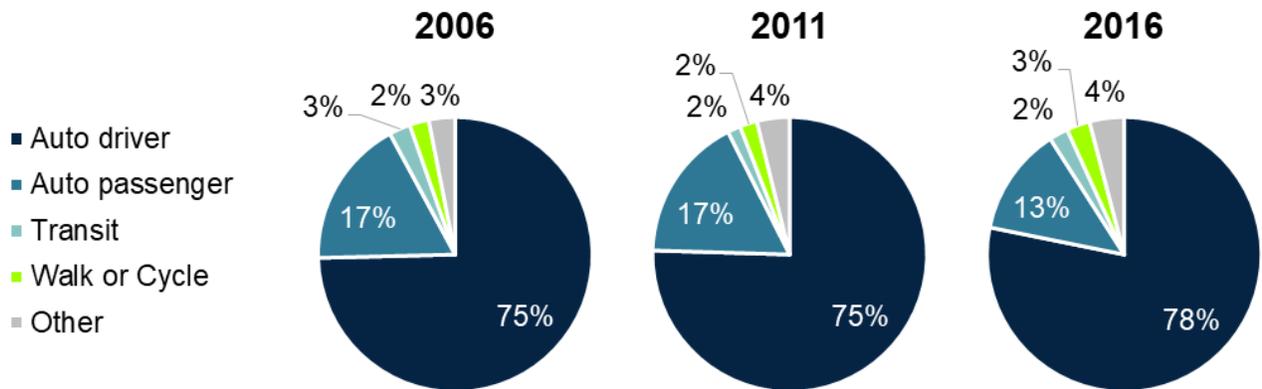
There are several important transportation trends that highlight needs and opportunities for Thorold. These include sustainable mode share, work trip mode share, and the work locations of Thorold residents and home locations of those employed in Thorold.

4.3.1 Use of Sustainable Transportation Modes Is Flat

Driving is the dominant mode of travel for all trip types in Thorold. Car-based trips, as a percentage of all trips, have stayed relatively consistent since 2006, accounting for 92% of all trips in 2006, 92% of all trips in 2011, and 91% of all trips in 2016. Exhibit 4.8 displays mode shares for all trip types in 2006, 2011 and 2016. Most recently, the 2016 TTS shows that the share of car drivers increased while car passengers decreased, suggesting that more automobile trips were being taken alone.

For Thorold to successfully encourage the use of sustainable modes, the TMP will need to develop strategies to address barriers to sustainable mode use.

Exhibit 4.8: Mode share of All Trips Originating or Terminating in Thorold



Source: Transportation Tomorrow Survey, 2006-2016.

4.3.2 Number of Trips Is Decreasing

Data indicates that the overall number of trips originating in or destined to Thorold is decreasing, as shown in Exhibit 4.9. Internal trips within Thorold have fallen dramatically since 2006, accounting for the majority of the decrease in total trips.

Exhibit 4.9: Daily Trips (All Purposes) Originating and/or Terminating in Thorold

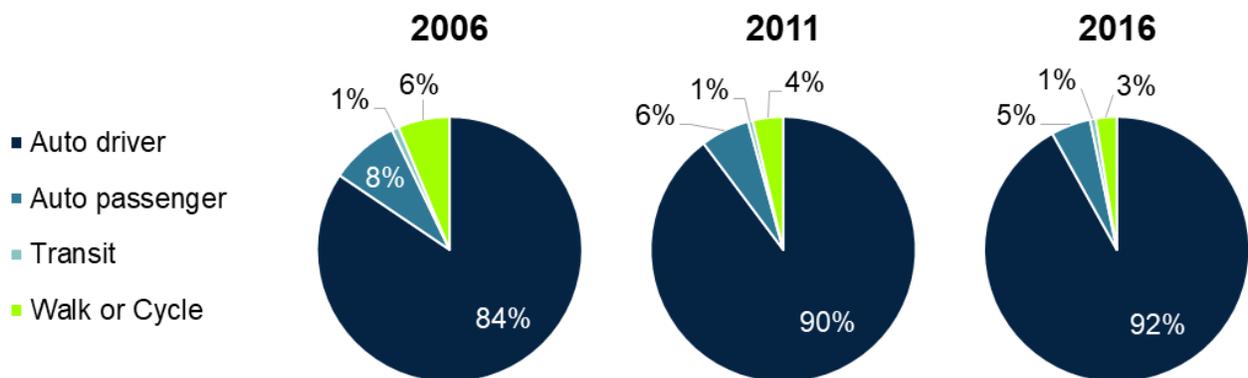
Daily Trips	2006	2011	2016
From Thorold to outside	26,022	24,649	24,007
To Thorold from outside	25,937	24,558	23,851
Within Thorold	13,535	10,066	8,836
All Trips	65,494	59,273	56,694

Source: Transportation Tomorrow Survey, 2006-2016.

4.3.3 Driving Alone is the Dominant Commuting Choice

The vast majority of commuters residing in Thorold travel to work by car – 97% are either car drivers or car passengers – and this has been increasing since 2006 as shown in Exhibit 4.10. A related trend is that the mode share for car passengers has been decreasing over that time, while the share for car drivers has been increasing.

Exhibit 4.10: Mode Share of Commute (All Periods) for Thorold Residents



Source: Transportation Tomorrow Survey, 2006-2016.

In 2016, only 3% of Thorold resident commuters either walk or cycle as their primary means of getting to work, however this has decreased since 2006. Transit for commuting to work has a mode share of less than 1% since 2006.

4.3.4 Commute Distances are Growing

The average commuting distance for Thorold residents has increased by 26% between 2006 and 2016. Exhibit 4.11 shows the average straight-line distance between home and work for all home-based work trips made by Thorold residents in 2006, 2011, and 2016.

Exhibit 4.11: Average Commute Distance for Thorold Residents

	2006	2011	2016
Distance (straight-line) (km)	11.3	12.7	14.3

Source: Transportation Tomorrow Survey, 2006-2016.

4.3.5 Residents Mostly Work in Neighbouring Municipalities

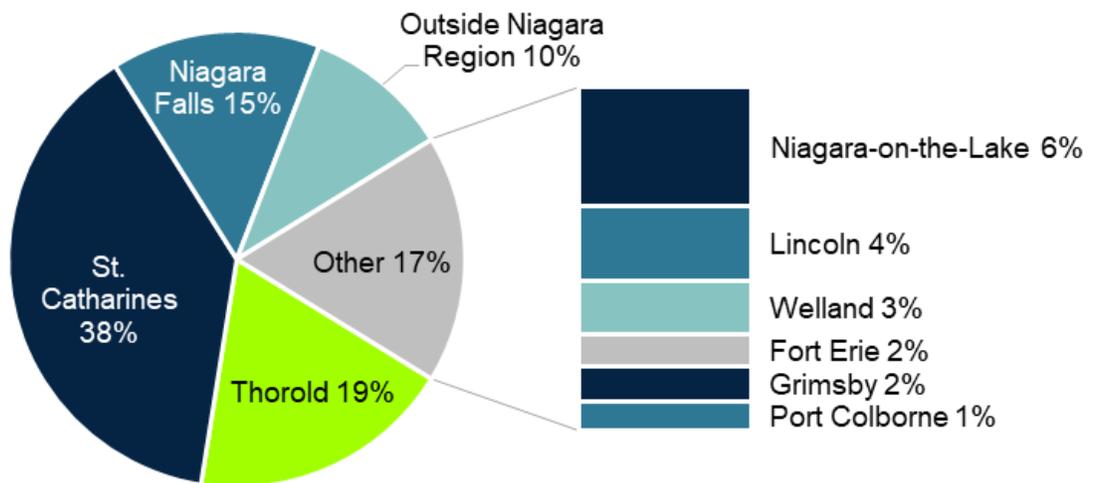
With Thorold’s geographic position within the centre of Niagara Region, its residents are able to work in many of the nearby municipalities. The Transportation Tomorrow Survey identified that 71% of Thorold residents work in other municipalities in Niagara Region, with St. Catharines being the work destination for 38% of employed Thorold residents (with a usual place of work).

Of the 10% who work outside of Niagara Region, roughly one quarter work in Toronto, while one third work in Hamilton.

The distribution of Thorold residents’ place of work has remained relatively stable since 2006, though the share working in St. Catharines fell from 44% to 38% between 2006 and 2016. Niagara-on-the-Lake’s share doubled from 3% to 6%, while other areas saw smaller gains to offset St. Catharine’s decrease.

The full distribution of Thorold residents’ place of work is shown in Exhibit 4.12

Exhibit 4.12: Location of Employed Thorold residents' Usual Place of Work

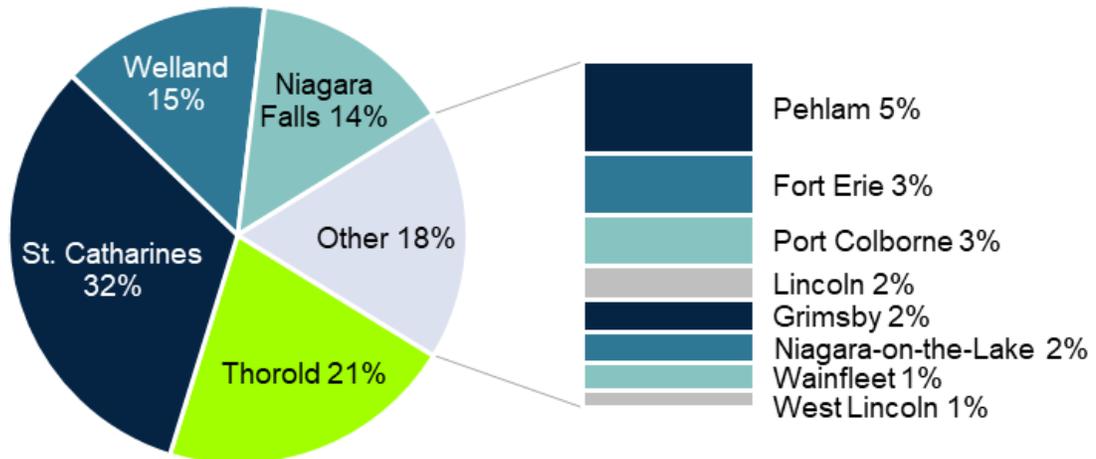


Source: Transportation Tomorrow Survey, 2016.

Conversely, of all the jobs in Thorold, only 21% are filled by local Thorold residents. The remaining jobs are almost entirely occupied by residents of other Niagara Region municipalities, as shown in Exhibit 4.13 with residents of St. Catharines employed in 32% of the jobs in Thorold. Only 1% of the jobs in Thorold belong to people from outside of Niagara Region.

The distribution of workers by residence remained relatively consistent between 2006 and 2016.

Exhibit 4.13: Municipality of Residence for those Employed within Thorold

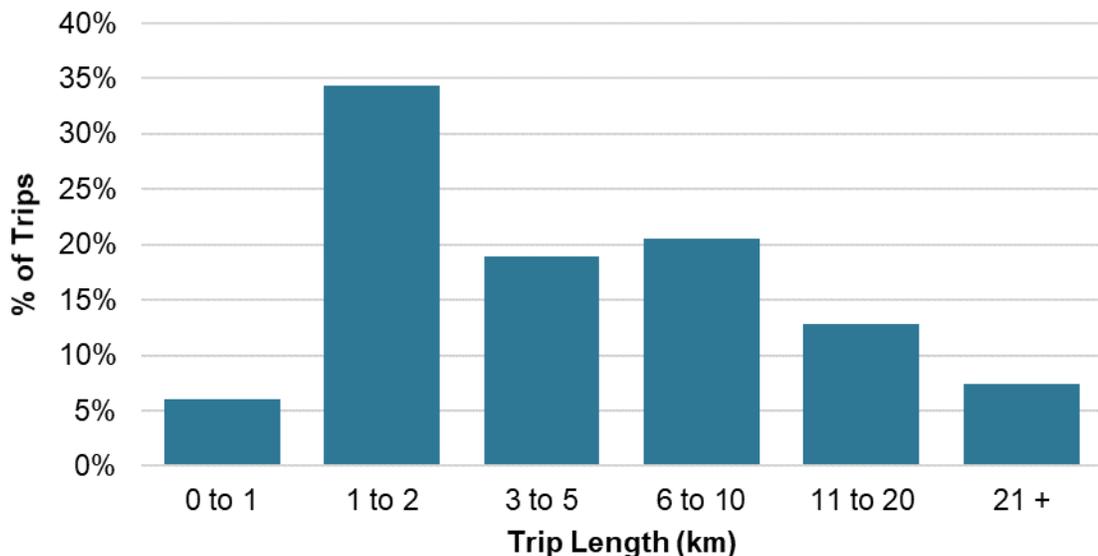


Source: Transportation Tomorrow Survey, 2016.

4.3.6 Most Trips by Thorold Residents are Short

Despite the fact that commute distances are growing, most trips originating in Thorold made by Thorold residents are short trips. Short trips are of particular interest because short trips are good candidates for active modes. Exhibit 4.14 shows that 40% of daily trips originating in Thorold made by Thorold residents are less than 2 km, while 59% less than 5 km. School trips and discretionary trips account for 76% of trips that were less than 2 km originating in Thorold and made by Thorold residents.

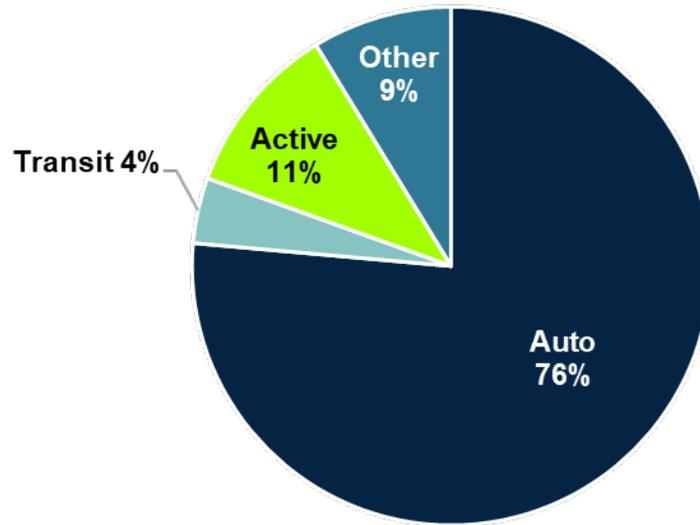
Exhibit 4.14: Trip Distance of Trips Originating in Thorold made by Thorold Residents



Source: Transportation Tomorrow Survey, 2016

Currently, most short trips in Thorold are made by car, either as a driver or passenger, as shown in Exhibit 4.15. This represents a great opportunity to encourage travellers to shift to active modes. While it is not reasonable to expect that all short trips can be made by active modes, as there are many reasons why an individual may choose to drive, there is nevertheless a large potential market for active transportation use in the City that can be fostered through expanded infrastructure, education, and programming for walking and cycling.

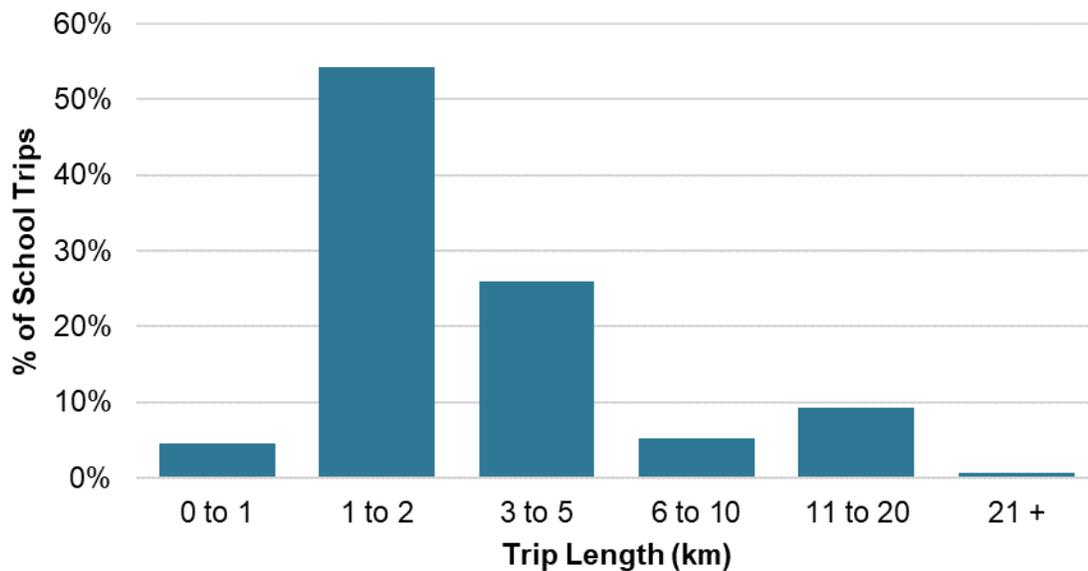
Exhibit 4.15: Mode Share of Short Trips (< 2 km) Originating in Thorold made by Thorold Residents



Source: Transportation Tomorrow Survey, 2016

The typical trip length for school trips is also of particular interest. School trips are usually repeated every day and occur on the morning and afternoon peaks, with some variation for post-secondary students. School trips make up 16% of all daily travel originating in Thorold made by Thorold residents and, as shown Exhibit 4.16, 59% of those trips are less than 2 km. Many trips to school are already made by sustainable modes - 29% of school trips are walking trips. There is still room to grow the active mode share for school trips.

Exhibit 4.16: Trip Distances of School Trips Originating in Thorold made by Thorold Residents



Source: Transportation Tomorrow Survey, 2016

5 Transportation Strategy

5.1 Needs and Opportunities

Based on the information presented in previous chapters of this report, the transportation needs and opportunities to be addressed by the Thorold TMP include the following:

Improve Connectivity

- Fill in gaps in the pedestrian network
- Implement pedestrian crossovers at strategic locations
- Prepare for growing demand of older adults for alternative modes of travel

Support Sustainable Modes

- Improve the attractiveness of transit as an alternative to driving
- Upgrade cycling facilities
- Improve pedestrian facilities

Improve System Performance

- Address localized congestion and increase efficiency of road network through traffic signal and/or intersection improvements.
- Improve universal accessibility of the transportation network
- Improve the cost-effectiveness of the transportation network

5.2 Alternative Solutions

Four planning alternatives were identified for this study. They are:

1. **Do Nothing:** maintain the current local transportation network and policy/programming as is.

The first alternative would not expand roads under Thorold's jurisdiction, but would assume that Provincial and Regional expansion proceeds as planned. This alternative would see congestion at certain locations continue or worsen and would not actively encourage a shift to sustainable modes.

2. **Business-As-Usual (BAU):** continue infrastructure expansion and upgrades at the City's current pace without new policy/programming.

The second alternative represents Thorold's current practice of incremental improvements to the network, including incremental active transportation network expansion with road reconstruction or rehabilitation.

3. **Road-Focused:** pursue road network vehicular capacity enhancements at key locations with no additional policy/programming

The third alternative aims to address transportation needs and congestion hot spots by focusing on expanding the road network. This alternative would not aim to encourage a shift to sustainable modes, nor would it make roads safer and inviting to other, non-automobile road users.

4. **Multi-modal Focused:** pursue strategic road network capacity enhancements, promote and expand the active transportation network, and pursue new policy/programs to encourage sustainable transportation choices.

The fourth alternative takes a multi-modal approach and includes road improvements balanced with a strong emphasis on expanding the active transportation network and encouraging the use of sustainable modes through policy and investment.

5.3 Evaluation of Alternatives

The four alternative strategies were evaluated against criteria based on the vision, objectives and directions established for the TMP at the outset of the study and based on the estimated environmental impacts of the strategy.

Each criterion was assigned a relative rating of low, moderate, or high based on how well each alternative supports the given criteria. Exhibit 5.1 summarizes the evaluation of the four alternative solutions.

Exhibit 5.1: Evaluation of Alternative Solutions

	ALTERNATIVE SOLUTIONS			
	DO NOTHING	BUSINESS-AS-USUAL	ROAD-FOCUSED	MULTI-MODAL FOCUSED
TMP Objectives and Directions				
Supports sustainable travel modes – supports a shift to walking, cycling, and transit.	Low Does not encourage a shift to sustainable modes and provide opportunities for individuals without access to a vehicle.	Moderate Potential to moderately encourage a shift to sustainable modes as active transportation infrastructure is expanded.	Low Does not encourage a shift to sustainable modes and provide opportunities for individuals without access to a vehicle.	High Balances all modes to provide a range of mode choice, improves competitiveness of sustainable modes, safety outcomes, and accessibility. Includes improvements to congestion hot spots.
Supports safety for all road users – supports improvements to safety for vulnerable road users (pedestrians, cyclists, mobility device users), of all ages and abilities.	Low Does not support safer streets for vulnerable road users.	Low Does not support safer streets for vulnerable road users.	Low Does not support safer streets for vulnerable road users.	High Supports safety for all road users through policy implementation and investment in active transportation infrastructure.
Optimizes use of existing transportation system – makes more efficient use of existing infrastructure.	Low Increases vehicular use of the existing road network but does not optimize use of the system for cyclists, pedestrians and transit users.	Moderate Increases vehicular use of the existing road network and provides incremental improvements to the system for cyclists, pedestrians and transit users.	Low Adds capacity to the network rather than making use of existing capacity. Does not optimize the use of existing infrastructure for walking, cycling and transit. Encourages private vehicle use.	High Policy and programming to shift demand to alternative modes. Opportunity to reallocate existing roads to support walking, cycling and transit to make better use of existing infrastructure.
Supports complete community development – supports development of compact pedestrian-oriented communities where community destinations are easily accessible by sustainable modes.	Low Does not strengthen neighbourhood connections and enhance opportunities for making trips by sustainable modes.	Low Does not strengthen neighbourhood connections and enhance opportunities for making trips by sustainable modes	Low Does not strengthen neighbourhood connections and enhance opportunities for making trips by sustainable modes	High Aligns with policy objective of creating complete communities by providing transportation infrastructure and policy that supports sustainable mode choices.
Supports economic development – supports the efficient movement of goods to/from and within Thorold	Low Does not alleviate any congestion hotspots on local roads.	Low Will alleviate some congestion hotspots.	Moderate Will create additional road capacity for goods vehicles and alleviate congestion hotspots.	Moderate Will alleviate some congestion hotspots and reduce reliance on personal vehicles.
Supports financial sustainability – supports an affordable and financially sustainable plan	High Only involves maintenance costs for existing infrastructure.	High Capital costs in-line with current spending.	Low Significant additional capital and maintenance costs.	Moderate Moderate increase in capital and maintenance costs.

	ALTERNATIVE SOLUTIONS			
	DO NOTHING	BUSINESS-AS-USUAL	ROAD-FOCUSED	MULTI-MODAL FOCUSED
Environmental Impacts				
Minimizes negative Impacts to natural environment	<p>Moderate</p> <p>Maintains status quo, which does not improve existing transportation network's negative impacts on the natural environment.</p>	<p>Moderate</p> <p>Maintains status quo, which does not improve existing transportation network's negative impacts on the natural environment.</p>	<p>Low</p> <p>May have negative impacts to wildlife habitats and ecosystems, ground water, and surface water where the road network is expanded.</p>	<p>High</p> <p>Limited has impacts to wildlife habitats, ecosystems, and ground and surface water. Congestion hot spot improvements may have minor impacts.</p>
Supports climate change mitigation / adaptation	<p>Low</p> <p>Maintains status quo, does not help mitigate nor adapt to climate change.</p>	<p>Low</p> <p>Encourages travel by single-occupancy vehicles, which has negative impacts on mitigating climate change.</p>	<p>Low</p> <p>Encourages travel by single-occupancy vehicles, which has negative impacts on mitigating climate change.</p>	<p>Moderate</p> <p>May have positive impacts on mitigating climate change if the increased use of sustainable modes is achieved.</p>
Minimizes negative socio-economic and cultural impacts	<p>Moderate</p> <p>Not likely to have significant impacts on property, cultural or built heritage, and little impact on noise and air pollution. Does not align with planning objectives. Negative congestion related impacts will grow as Thorold's population grows.</p>	<p>Low</p> <p>Likely to result in an increase in noise and air pollution. May have impacts to property and cultural or built heritage where road network is expanded. Does not align with planning objectives.</p>	<p>Moderate</p> <p>May result in an increase in noise and air pollution. May have impacts to property and cultural or built heritage where road network is expanded. Does not align with planning objectives.</p>	<p>Moderate</p> <p>May have impacts to property, cultural or built heritage where network is expanded. May have positive impacts to noise and air pollution if the increased use of sustainable modes is achieved. Aligns with planning objectives.</p>

5.4 Preferred Alternative

The multi-modal alternative is the preferred approach for the Thorold TMP. As demonstrated in Exhibit 5.1, the multi-modal focused approach is the alternative that best aligns with the vision and objectives of the TMP and best aligns with Thorold's overall vision for encouraging sustainable growth. Investing in infrastructure and policy that supports walking, cycling, and transit has other benefits to the community including:

- Reducing greenhouse gas emissions and their environmental impacts.
- Encouraging more active lifestyles, which has positive impacts on public health and preventing chronic disease.
- Promoting equity for all road users by providing options for those who do not own or drive a car.
- Attracting young professionals, families and business investors who want to live and work in urban areas with flexible and convenient transportation options.

The transportation trends presented in Section 4.3 also indicate that the multi-modal approach is needed to support changes in transportation trends in Thorold.

6 Addressing Challenges and Opportunities in a Multi-modal Approach

An overview of transportation opportunities that will be investigated as part of a multi-modal solution is provided below.

6.1 Complete Streets

The Thorold TMP presents a tremendous opportunity to improve safety for all road users while encouraging greater active transportation use by adopting a Complete Streets approach. Complete streets are road corridors that are designed, operated and maintained with all road users in mind. A Complete Streets policy encourages more equitable distribution of road space, increasing road safety for all road users and making the road network more inviting for active modes. A road network that is more inviting for active modes increases the probability that more trips will be made by active modes, contributing to a healthier community and more efficient use of the road network.

6.2 Active Transportation

There is growing desire to expand the active transportation network throughout Thorold, both on- and off-street. Cycling is a popular recreational activity across Niagara Region and within Thorold, but active transportation for utilitarian means is not as popular. Walking and cycling comprised just 3% of all trips to, from and within Thorold. However, as described in Section 4.3, 40% of daily trips originating in Thorold made by Thorold residents were less than 2 km. This high proportion of short trips represents an excellent opportunity to increase the active transportation use in Thorold, as many short trips are can be comfortably made using an active mode.

Additionally, the TMP is being prepared in parallel with a Parks, Trails, and Recreation Master Plan. A coordinated approach to trails and other cycling infrastructure will be necessary. Under the right circumstances, it may be possible to provide infrastructure that can serve the dual purpose of providing recreational opportunities while serving as useful transportation links.

One opportunity that has generated interest is the potential extension of the Steve Bauer Trail from Fonhill towards downtown Thorold and further to connect to the Welland Canal trail. The abandoned rail corridor provides a connect between Pelham and Beaverdams Road, including an underpass of Highway 406, but is not maintained by the City of Thorold.

Finally, developing a process to protect corridors for active transportation in new development areas has been identified as an issue by City staff.

6.3 Transit Service

There are several opportunities to improve transit service that will be pursued through the TMP.

Engaging with St. Catharines Transit and Niagara Region Transit – the two transit service providers in Thorold – will be a critical element of improving transit service in the municipality. Specific needs to be explored include extending fixed-route service to growing neighbourhoods and connecting rural areas to fixed-route services through demand responsive mobility options. Given that most Thorold residents commute to a neighbouring municipality for work, transit service improvements will be an important part of decreasing the number of single-occupant vehicle trips.

Opportunities to improve service levels to attract non-student ridership will also be explored – including connections to GO Transit service – as will opportunities to expand the network of sidewalks and crosswalks to improve access to transit stops.

6.4 Transportation Demand Management

Transportation Demand Management (TDM) has an important role to play in reducing reliance on single-occupant vehicles, as well as reducing demand on the road network during peak-periods. A TDM strategy will be developed as part of the TMP that will focus on education and programming to encourage more sustainable mode use.

6.5 Road Network

The road network in Thorold stands to benefit from minor improvements that will be supported by planned and proposed Provincial and Regional infrastructure. The focus of the road network recommendations will address the following:

- Capacity/operational constraints around Sir Isaac Brock Way, Merrittville Highway, and Highway 406;
- Excessive pavement widths on Pine Street;
- Connections to support growth in Port Robinson West; and
- Urban road needs in growing rural areas.

6.6 Street Safety and Traffic Calming

There has been concern regarding speeding on city streets resulting in a desire to implement traffic calming in select locations. One specific issue that has been raised is Pine Street. Until recently, Pine Street had railway tracks (Pine Street Spur) in the centre of the roadway. After removal of these tracks drivers perceive the travel lanes to be wider which has resulted in increased speeds. The City is looking to manage traffic speeds through traffic calming elements and/or a re-allocation the existing pavement widths.

6.7 Road Design Guidance

In order to recognize the variety of land use contexts and road functions in Thorold, a new road class system that differentiates urban and rural classes will be developed to provide more detailed guidance on the function of Thorold streets. Guidance is also needed for rural roads in areas that are evolving from rural to urban communities.